

DocuPac/PTO 10 MAR 2005

PCT/AU03/01194



10/527524

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I, JULIE BILLINGSLEY, TEAM LEADER EXAMINATION SUPPORT AND  
SALES hereby certify that annexed is a true copy of the Provisional specification  
in connection with Application No. 2002951324 for a patent by BRUCE ELLIS  
WILKS and ALICE WENDY WILKS as filed on 11 September 2002.



WITNESS my hand this  
Twenty-third day of September 2003

*J. Billingsley*

JULIE BILLINGSLEY  
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Regulation 3.

**Bruce Ellis Wilks AND Alice Wendy Wilks**

**A U S T R A L I A**

**Patents Act 1990**

**PROVISIONAL SPECIFICATION**

for the invention entitled:

**"Roof Anchor"**

The invention is described in the following statement:

- 1 -

## **ROOF ANCHOR**

### **FIELD OF THE INVENTION**

- 5 This invention relates to devices and methods for providing a secure anchor point on a roof. In particular, the invention relates to a device and method for providing a portable anchor system on a roof for attachment and securing of safety harnesses for people, particularly, workers, on the roof.

### **10 BACKGROUND OF THE INVENTION**

- The history of industrial safety is regularly punctuated with incidents of workers falling from roofs. The consequences are often fatal. The need for workers to be on roofs arises in a wide range of situations which necessitate professional  
15 services being supplied in that environment.

- The types of trades people who are often required to negotiate the dangers of roof top work include plumbers, tilers, electricians, roofers, builders, painters, guttering tradesmen and air conditioning installers and maintenance operators. The danger  
20 associated with roof top work varies with the type of roof and weather conditions. Roofs which are formed of corrugated iron may be quite slippery particularly if coated in dust or when wet. Tiled roofs may provide a better frictional surface however they can also be slippery when dusty or when glazing is relatively new and smooth. One of the problems associated with working on pitched roofs is that  
25 if a person begins to slide there is little to arrest their descent as roof surfaces tend to be smooth. Some reliance is placed on the ability to connect with a gutter prior to slipping off a roof. However, such gutters are often poor targets during an uncontrolled descent and may also be inadequate for the purposes of stopping a person with subsequent release by the gutter and a fall.

- 30 In some buildings, the gutters may be absent either as a design feature or due to

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repair or maintenance of the gutter. The danger in this case is magnified. Accidents are by no means limited to professional service providers with a significant history of house owners suffering severe injury from falls as a result of attempting to perform minor maintenance tasks such as cleaning gutters.

5

Recent legislation in some jurisdictions has mandated the need to provide fall arrest systems when workers are on roofs. One form of such devices involves the erection of scaffolding around the downhill edges of a roof thereby providing a safety barrier for any worker who has the misfortune to fall. Attempts have been made to use safety harnesses which are supported by safety lines tied to fixed anchor points. One difficulty arises in that such anchor points are relatively uncommon and are usually entirely absent from a roof. If a permanent anchor is fixed to a roof it suffers from the disadvantage of cost and lack of utility to the extent that it is unable to be moved. A series of such anchor points may be required to provide safe options for workers.

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It would be of considerable benefit to provide an anchor for a roof which was effective, adjustable and portable.

## 20 SUMMARY OF THE INVENTION

Throughout this specification, unless the context requires otherwise, the word "comprise", or variations such as "comprises" or "comprising", will be understood to imply the inclusion of a stated element or integer or group of elements or integers but not the exclusion of any other element or integer or group of elements or integers.

25

In one form, although it need not be the only form or indeed the broadest form, the invention resides in a portable anchor for use on a roof, the portable anchor comprising:

30

an attachment member adapted to attach to an edge region of the roof;

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a force distribution member extending transversely to the attachment member and adapted for location on a surface of the roof; and

a connection means mounted to the attachment member or the force distribution means, the connection means adapted to receive a load support line.

5

Preferably the attachment member is formed as an elongate member. The attachment member may have a gap formed by a first side structure and a second spaced side structure, the gap adapted to locate around an edge of the roof. The first side structure may be a wall structure. The first wall structure may be formed by a plurality of teeth like structures. The first side structure may be contoured to conform to a profile of the underside of the roof edge. The first side structure may be padded.

15 The second side structure may be formed as a wall. The second side structure may be formed as one or more shaft members with a longitudinal axis oriented substantially perpendicularly to the first side structure. The one or more shaft members are preferably threadably engaged with support brackets thereby providing adjustment means for adjusting the gap.

20 Preferably, the first side structure and second side structure form clamping means for clamping at least a part of the roof edge region in the gap. The attachment member may include a stop structure such as a wall positioned to engage the edge of the roof during use. The attachment member may be located intermediate the first side structure and second side structure.

25

The shaft members may have handles for easy operation and rotation of the shaft members in the support brackets.

30 The force distribution member is preferably formed as an elongate tubular member. The tubular member is preferably cylindrical. The cylindrical tubular member may be dimensioned to substantially occupy a corrugation in a corrugated

roof.

The force distribution member is preferably substantially perpendicular to the attachment member. The force distribution member may be formed in any  
5 suitable shape. For example, it may be formed as a plurality of perpendicular members originating from the attachment member. In an alternative embodiment, the force distribution member may be formed as a planar member. The force distribution member may be formed to correspond with an outer shape of the roof. The outer shape may be corrugated. The force distribution member may be one  
10 or more out-rigger type devices originating from the attachment member.

The force distribution member may include padding on its roof contacting surface. The force distribution member may include a foot for engaging the roof surface.

15 The connection means is preferably an eye. The eye may be removably mounted in an aperture in the force distribution member. The connection means may be a shackle or hook mounted on the force distribution member.

The load support line may be a safety line.

20

The portable anchor may include a safety line fixed permanently to the connection means. Preferably the safety line is releasably fixed to the connection means.

In a further aspect, the invention resides in a method of providing a roof anchor,  
25 said method comprising the steps of:

locating an anchor according to the above description with its gap situated around an edge region of a roof;

positioning a force distribution member of the portable anchor directed up the roof;

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attaching a safety line to connection means of the anchor; and  
attaching the safety line to a safety harness device for a wearer.

- 5 -

The method may further include the steps of tightening the first side structure and/or the second side structure to provide clamping engagement of roof edge region. Tightening the first side structure and/or the second side structure may  
 5 include the step of rotating threadably mounted members to advance their ends into contact with the roof surface. The method may include locating portable anchors on respective spaced roof edges.

In another aspect, the invention lies in a portable roof anchor comprising:  
 10 an attachment foot formed as an elongate "L" shaped bar;  
 two threaded bolts mounted for advancing or retraction by rotation and disposed transverse to one surface of the L bar;  
 a cylindrical arm connected approximately centrally to the foot and extending normal thereto;  
 15 an attachment aperture formed in or mounted on the foot or the arm;  
 wherein:  
 the components are configured to compressively engage a roof edge region between the one surface and two threaded bolts with the arm positionable on the  
 roof.

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# **BRIEF DESCRIPTION OF THE DRAWINGS**

Figure 1 is a perspective view of a preferred embodiment of the portable anchor of the present invention.

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Figure 2 is a perspective view of the device of Figure 1 highlighting the mechanism for attaching to an edge region of a roof.

Figure 3 is a side view of a clamp member of the portable anchor and bolt.

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Figure 4 is a bottom view of the portable anchor of Figure 1.

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Figure 5 is a perspective view of the roof anchor in operative position on a roof.

## DETAILED DESCRIPTION OF THE DRAWINGS

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Referring to Figure 1 there is seen a portable anchor comprising an attachment member 11, a force distribution member 12 and connection means in the form of eye 13. The attachment member 11 is formed as an elongate foot having a flat wall 14 and upright wall 15. Spaced adjustable threaded shafts 15, 17 are supported by correspondingly threaded brackets 18, 19 respectively.

10

The force distribution member 12 is formed as a cylindrical tubular extension originating from a position substantially normal to the attachment member 11. The force distribution member 12 has an offshoot tubular section 18 which receives eye 13.

15

Figure 2 shows a closer view of the attachment member 11 with flat wall 13 and upright wall 15 in this case formed integrally. A suitable material is a length of angle iron.

20

The portable anchor may be formed of any suitable material. A preferred material is metal and preferably rust resistant metal. However, it is possible to form such an anchor in other materials including tough polymeric type materials which may have an advantage in low weight while maintaining substantial strength. The flat wall 14 forms a first side structure. The second side structure is formed by the ends of the adjustable threaded shafts 16, 17 and thereby define a gap into which an edge region of a roof may be located. The threaded shaft 16, 17 may then be adjusted into compressive contact by rotation of handles 20, 21 respectively. The force distribution member 12 is joined to the attachment member 11 so as to provide a space 22 between flat wall 14 and force distribution member 12 thereby allowing for location of the roof edge region in close proximity and preferably

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- 7 -

abutting contact with upright wall 15 which acts as stop structure. The upright wall 15 provides a stop or a resting point for an edge of the roof.

It is clear that there are many different embodiments possible to provide the function of the present device, for example, the adjustable threaded shaft 16, 17 may be replaced by an adjustable wall member for clamping an edge region of the roof between the flat wall 14 and the adjustable wall. The flat wall 14 may be contoured to conform to the contour of a roof such as corrugated roof, a shingle roof, a tiled roof or any suitable form of material. The space 22 may be widened as required in such a device. The flat wall 14 and adjustable walls (not shown) may be formed with padding to provide a general clamping action which will self conform to the shape of the roof member. In one form, the edge attaching function may be performed by a U shaped channel formed in the attachment member.

Figure 3 shows a close up view of the threaded shaft 17 and handle 21. In this view, the threaded shaft 17 is adjusted down so the gap 23 formed by the first side structure in the form of flat wall 14 and second side structure in the form of a threaded shaft is minimised. The clamping action is preferred as it protects against dislodgment of the anchor from the roof edge region and potentially catastrophic displacement of the device.

Figure 4 shows a distal end of the force distribution member 12 in which a roof contacting region is covered with a padded material 24 to minimise abrasion or other damage to the roof. The force distribution member 12 is shown in its preferred embodiment. However, it is clear to a skilled addressee that the force distribution member may be formed in any suitable shape such as one or more triangulated extensions or even a sheet or planar extension. The sheet may be formed so as to conform with the roof profile on which it is to be used. That profile may be in the form of a corrugated sheet.

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A portable anchor of the present invention is showed in operating position in

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- Figure 5. The adjustable threaded shaft members 16, 17 are tightened into compressive contact with an end region 20, 25 of the roof. The sheets of corrugated metal have edges in abutting contact with upright wall 15 thereby locking the device and sliding the force distribution member 12 is located in a corrugation 27 of the roof sheet 26. A safety line 28 is locked to a snap shackle 29 which in turn is fastened to the eye 13. The eye 13 may be removably mounted in offshoot cylinder 30 and retained by means of a suitable locking means such as a grub screw.
- 10 The safety line 28 is connected to a safety harness for use by a worker. When a force is applied along the safety line 29, the force is transferred through eye 13 and cylinder 30 to result in a vector along the corrugation 27 and a rotational vector on the portable anchor 10. The force along the corrugation 27 is resisted by the longitudinal strength of the sheet 26. The force distribution member 12 provides a mechanical advantage to a leverage effect to resist the rotational force which results in a diminished upward direction force on the attachment member 11 thereby reducing or minimising the tendency for the sheet 26 to lift by displacement of fixing screws 31.
- 20 In a preferred method of using the present device, a portable anchor may be located on opposite sides of a roof to guard against a person falling in a direction towards a single anchor and thereby negating the safety of the device.
- 25 The present invention has clearly marked and significant safety advantages for a roof worker. In addition, the device provides a non-obtrusive and permanent method of providing safety for workers and may be readily transported from site to site. The portable anchor may be configured to suit different roof coverings such as tiles, colourbond, slate and shingles. The length of the force distribution member 12 may be varied as required and the positioning of the eye may be arranged to meet different requirements.
- 30

In one embodiment, different components are manufactured for releaseable engagement each with the other and providing a range of different options in the component. For example, different profiles of the attachment means may be provided with different clamping members thereon. Different forms of the force  
5 distribution means may also be provided in a tubular form and/or in a planar style. These parts may then be mixed and matched as required.

Throughout the specification the aim has been to describe the preferred  
embodiments of the invention without limiting the invention to any one embodiment  
10 or specific collection of features. Those of skill in the art will therefore appreciate that, in light of the instant disclosure, various modifications and changes can be made in the particular embodiments exemplified without departing from the scope of the present invention. All such modifications and changes are intended to be included within the scope of the disclosure.

15  
DATED this 11th day of September 2001  
Bruce Ellis Wilks AND Alice Wendy Wilks  
by DAVIES COLLISON CAVE  
Patent Attorneys for the Applicants

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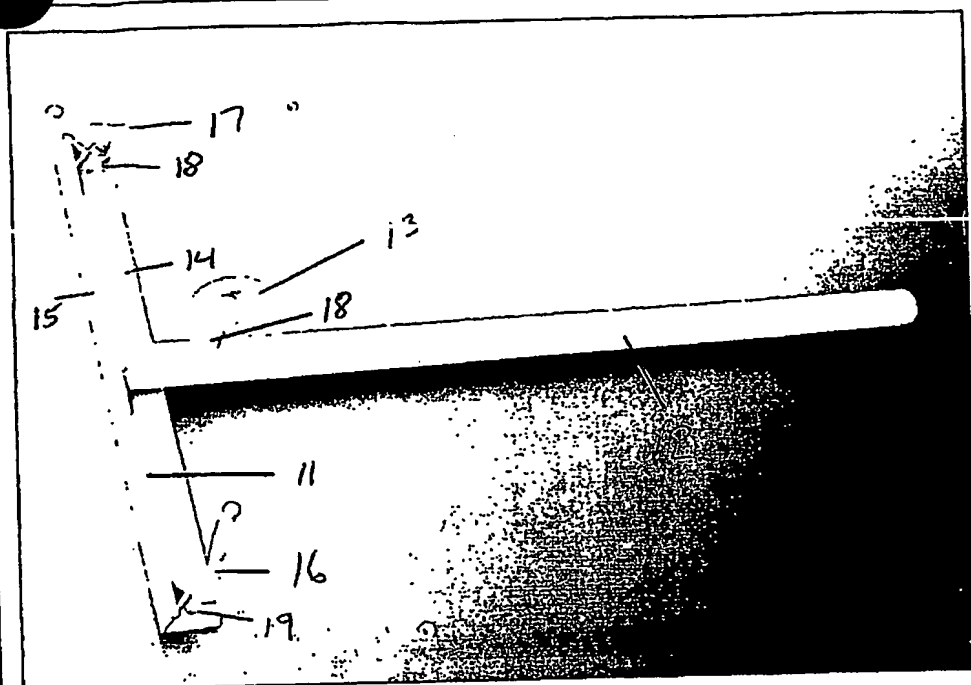


FIGURE 1.

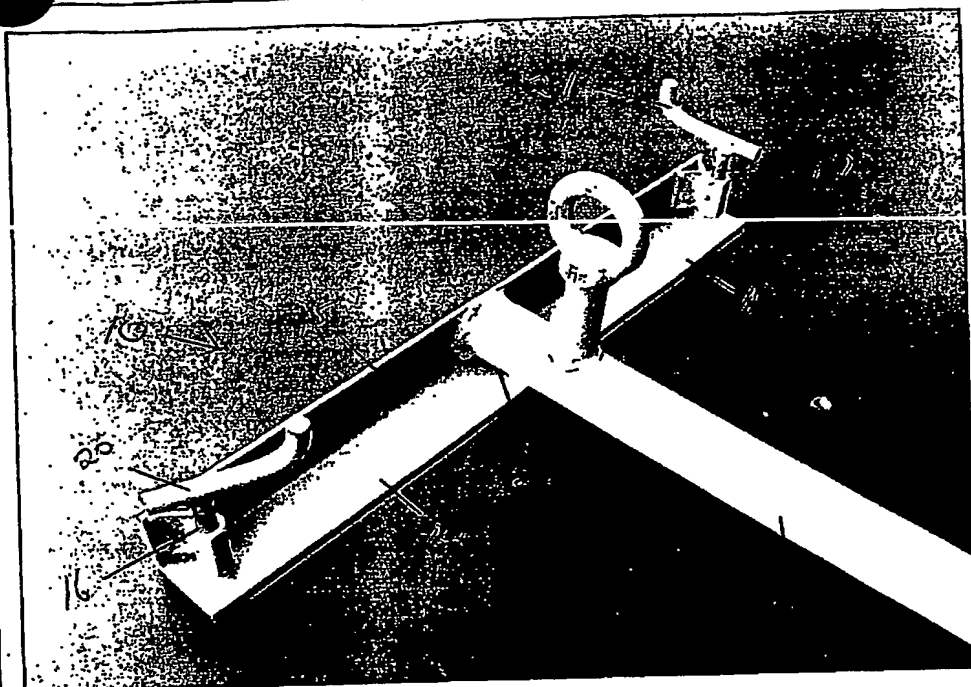
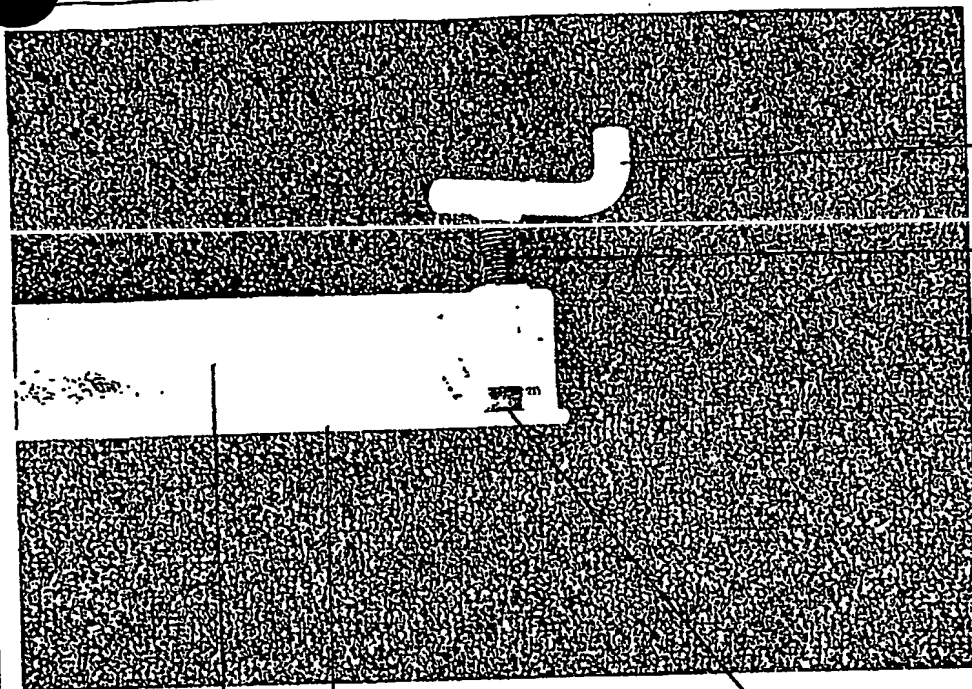


FIGURE 2



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FIGURE 3

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14

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17

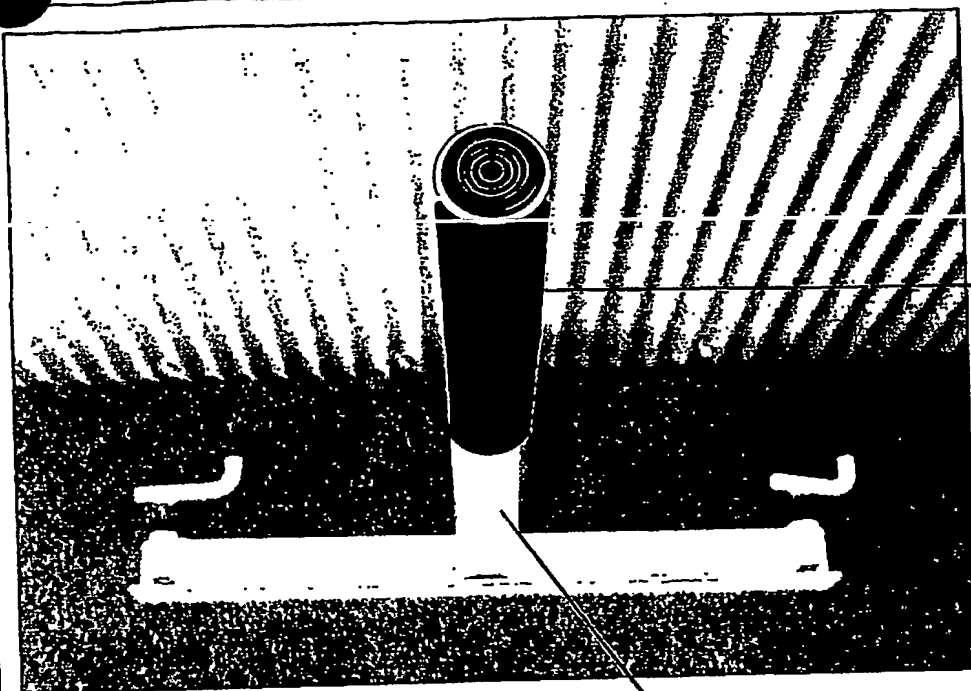


FIGURE 4

12

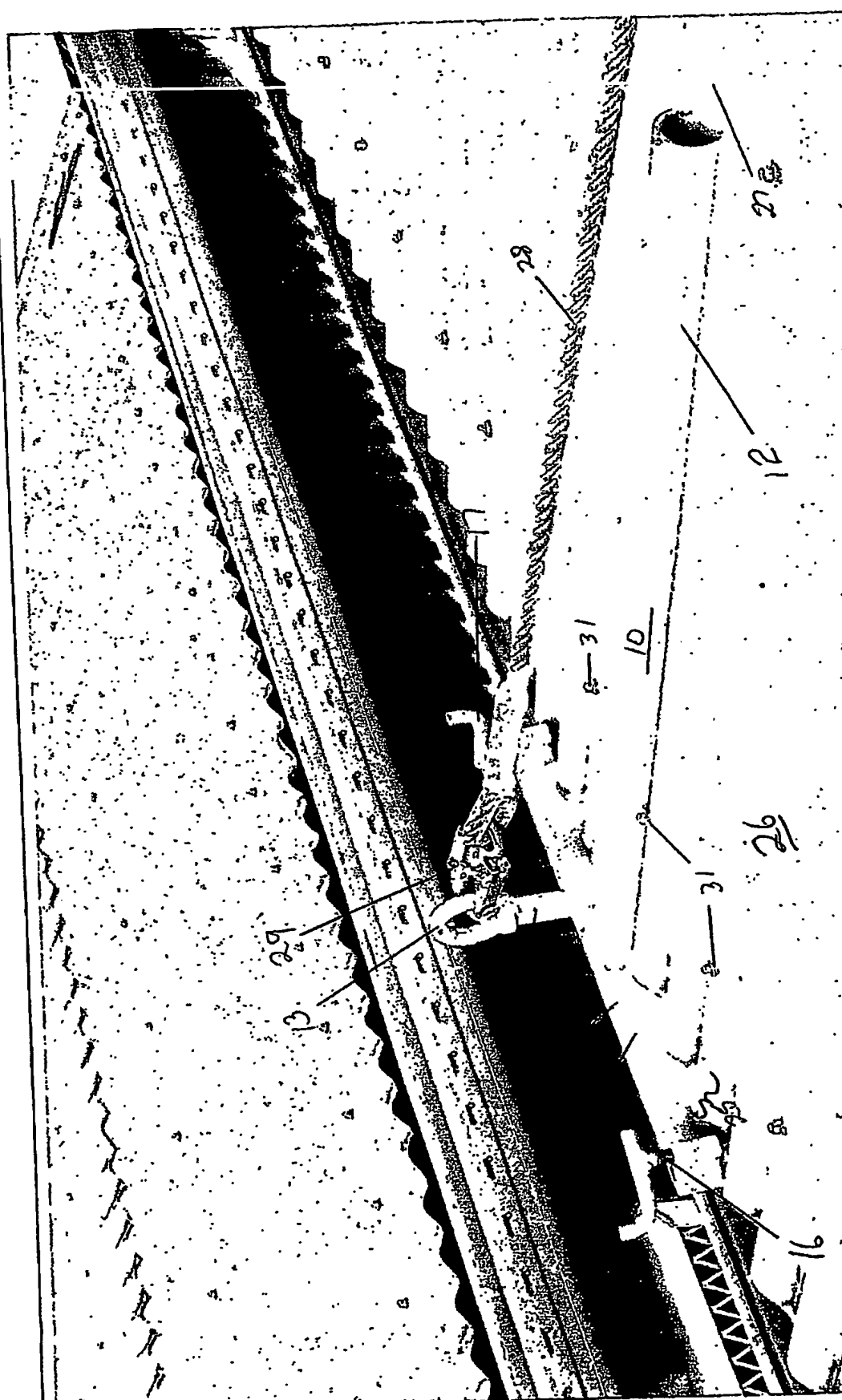


FIGURE 5

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